UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,491	09/23/2003	Mark Gary Weinberg	CL1916 US NA	2271

23906 7590 08/28/2007

E I DU PONT DE NEMOURS AND COMPANY
LEGAL PATENT RECORDS CENTER
BARLEY MILL PLAZA 25/1128
4417 LANCASTER PIKE
WILMINGTON, DE 19805

EXAMINER	
FEELY, MICHAEL J	
ART UNIT	**PAPER NUMBER**
1712	

MAIL DATE	DELIVERY MODE
08/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/668,491	WEINBERG ET AL.	
	Examiner	Art Unit	
	Michael J. Feely	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Pending Claims

Claims 29-49 are pending.

Response to Amendment

1. After further consideration, the finality of the last Office action is withdrawn. The amendment of August 9, 2007 has been entered.

2. The rejection of claims 29-49 under 35. U.S.C. 112, 1st paragraph, has been overcome by amendment.

3. The rejection of claims 29-49 under 35. U.S.C. 112, 2nd paragraph, has been overcome by amendment.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 46-49 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are:

The instant invention is drawn to materials used for flash-spinning *(see Abstract; entire Specification)* wherein in the spin agent is flashed off (vaporized) during the spinning process. The product-by-process limitations set forth in claims 46-49 are confusing because the spin agent appears to be present in the "formed" materials/products. It is unclear how the *composition*,

itself, can be *formed* from into these materials/products. Furthermore, it appears that *flash-spinning* is a required process (and product-by-process) limitation of the instant invention.

The following is suggested claim language: The "X" produced by flash-spinning the spin mixture of claim 30. "X" is: plexifilamentary yarn, microcellular foam, or non-woven fabric.

Preamble Limitations

6. In claims 29-49, the recitation *"spin"*, with respect to the mixture/composition has been given little patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

In the instant case, the preamble merely recites the intended use of the mixture/composition, wherein the prior art can meet this future limitation by merely being capable of being spun in any capacity.

Claim Rejections - 35 USC § 102/103

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 29-31, 33, 34, 36-38, 41-45, and 48 are rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cohen et al. (US 2002/0072571).

Regarding claim 29, Cohen et al. disclose: ***(29)*** a mixture comprising a spin agent (paragraph 0045: *solvent not removed*) and a polymer component (paragraph 0045), said polymer component consisting of: an optional first polymer and a second polymer; comprising 0 to 95 % by weight of said first polymer *(optional)* and 5 to 100% by weight of said second polymer (Abstract; paragraph 0045); wherein said first polymer is selected from the group consisting of polyethylene and polyethylene terephthalate *(optional)*; wherein said second polymer is a functional polymer selected from the group consisting of polyethylene having 1 to 25 mol % of pendant functional groups and polyethylene terephthalate having 1 to 25 mol % of pendant functional groups (Abstract; paragraphs 0021-0041 & 0046); and wherein said pendant functional groups are selected from the group consisting of fluorocarbon radicals and oxyethylene radicals (paragraph 0041).

Regarding claims 30, 31, 33, 34, 36-38, 41-45, and 48, Cohen et al. disclose: ***(30)*** a mixture comprising a spin agent (paragraph 0045: *solvent not removed*) and a polymer component (paragraph 0045), said polymer component consisting of: an optional first polymer and a second polymer (paragraph 0045); 0 to 95 % by weight of said first polymer *(optional)* and

5 to 100 % by weight of a said second polymer (paragraph 0045); wherein the first polymer is selected from the group consisting of polyolefins, copolymers of polyolefins and ethylenically unsaturated monomers, polyesters, and mixtures thereof *(optional)*; and wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 1 to 25 mol % of pendant functional groups, copolymers of polyolefins and ethylenically unsaturated monomers having 1 to 25 mol % of pendant functional groups, polyesters having 1 to 25 mol % of pendant functional groups, and mixtures thereof (Abstract; paragraphs 0021-0041 & 0046); and wherein said pendant functional groups are selected from the group consisting of fluorocarbon radicals, perfluorovinyl ether radicals, vinyl silane radicals and oxyethylene radicals (paragraphs 0037-0041);

(31) wherein the spin agent is selected from the group consisting of aliphatic hydrocarbons, fluorocarbons, halogenated hydrocarbons, and hydrofluorocarbons (paragraph 0045);

(33) wherein the first polymer is polyethylene terephthalate *(optional)*;

(34) wherein the first polymer is polyethylene *(optional)*;

(36) wherein the second polymer is polyethylene having 1 to 25 mol % of pendant functional groups (paragraphs 0021-0041 & 0046);

(37) wherein the pendant group is a fluoro-olefin radical (paragraph 0041); ***(38)*** wherein the second polymer is grafted with fluoro-olefin radical (paragraph 0041);

(41) wherein the pendant group is a perfluorovinyl ether (paragraph 0041); ***(42)*** wherein the second polymer is grafted with perfluorovinyl ether (paragraph 0041);

(43) wherein the pendant group is a vinyl silane (paragraphs 0037-0040); *(44)* wherein the second polymer is grafted with vinyl silane (paragraphs 0037-0040);

(45) wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 5 to 15 mol % of pendant functional groups copolymers of polyolefins and ethylenically unsaturated monomers having 5 to 15 mol % of pendant functional groups, polyesters having 5 to 15 mol % of pendant functional groups, and mixtures thereof (paragraphs 0021-0041 & 0046); and

(48) the spin mixture of Claim 30 formed as a non-woven fabric (paragraphs 0045-0047: *extruded products*).

Regarding all of the above claims, Cohen et al. fail to call their composition a *spin* mixture; however, the presence of an aliphatic/aromatic halocarbon solvent inherently gives the composition the capability of *spinning*. Furthermore, it should be noted that Cohen et al. satisfies all of the material/chemical limitations of the instant invention – *see MPEP 2112.01*.

Therefore, Cohen et al. inherently satisfy the instantly claimed *spin* mixture because they satisfy all of the material/chemical limitations of the instant invention. The presence of an aliphatic/aromatic halocarbon solvent inherently gives the composition the capability of *spinning*.

Claim Rejections - 35 USC § 103

10. Claims 29-35, 37, 38, 41, 42, 45, 46, 48, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blades et al. (US Pat. No. 3,081,519) in view of Magat et al (US Pat. No. 3,412,175).

Regarding claims 29-31, 33-35, 37, 38, 41, 42, 45, 46, 48, and 49, Blades et al. disclose: ***(29 & 30)*** a flash-spinning mixture (column 7, line 63 through column 8, line 47) comprising a spin agent (column 7, line 74 through column 8, line 31) and a polymer component (column 4, line 65 through column 5, line 4; column 7, lines 63-73); ***(31)*** wherein the spin agent is selected from the group consisting of aliphatic hydrocarbons, fluorocarbons, halogenated hydrocarbons, and hydrofluorocarbons (column 7, line 74 through column 8, line 31); ***(46)*** said flash-spinning mixture formed as a plexifilamentary yarn (column 11, lines 7-37); ***(49)*** the plexifilamentary yarn of Claim 46 formed as a non-woven fabric (column 11, lines 7-37); and ***(48)*** said flash-spinning mixture formed as a non-woven fabric (column 11, lines 7-37). Blades et al. use crystalline polymers, such as ***(29, 30, 33, 34)*** polyethylene and polyester, or polymer mixtures thereof (see column 7, lines 63-73; Examples; Table VII). The result is a multi-fibrous yarn with exceptional strength and uniformity (see column 1, line 61 through column 2, line 56). However, they fail to disclose the second functional polymer set forth in the instant invention.

Magat et al. disclose a functionalized (grafted) polymer used to spin fibers (see columns 1 & 2), wherein the grafting takes place prior to spinning (see column 2, lines 65-72). This corresponds to the instantly claimed second polymer:

(29) wherein said second polymer is a functional polymer selected from the group consisting of polyethylene having 1 to 25 mol % of pendant functional groups and polyethylene terephthalate having 1 to 25 mol % of pendant functional groups (columns 1 & 2); and wherein said pendant functional groups are selected from the group consisting of fluorocarbon radicals and oxyethylene radicals (column 2, lines 13-41);

(30) wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 1 to 25 mol % of pendant functional groups, copolymers of polyolefins and ethylenically unsaturated monomers having 1 to 25 mol % of pendant functional groups, polyesters having 1 to 25 mol % of pendant functional groups, and mixtures thereof (columns 1 & 2); and wherein said pendant functional groups are selected from the group consisting of fluorocarbon radicals, perfluorovinyl ether radicals, vinyl silane radicals and oxyethylene radicals (column 2, lines 13-41);

(35) wherein the second polymer is polyethylene terephthalate having 1 to 25 mol % of pendant functional groups (columns 1 & 2; Table 1);

(37) wherein the pendant group is a fluoro-olefin radical (column 2, lines 13-41); *(38)* wherein the second polymer is grafted with fluoro-olefin radical (column 2, lines 13-41);

(41) wherein the pendant group is a perfluorovinyl ether (column 2, lines 13-41); *(42)* wherein the second polymer is grafted with perfluorovinyl ether (column 2, lines 13-41); and

(45) wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 5 to 15 mol % of pendant functional groups copolymers of polyolefins and ethylenically unsaturated monomers having 5 to 15 mol % of pendant functional groups, polyesters having 5 to 15 mol % of pendant functional groups, and mixtures thereof (columns 1 & 2).

Magat et al. disclose that their grafted polyesters give increased resistance to aqueous soil, oils, oily soil and dry soil *(see Abstract)*. Stain resistance is a commonly desired property in yarns and fabrics. In light of this, one of ordinary skill in the art would have recognized the benefit of combining these materials with the polyethylene and/or polyester blends of Blades et

al. Such a combination would have produced strong and uniform yarns with exceptional stain resistance.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the grafted polyester spin materials of Magat et al. to the polyethylene and/or polyester spin blends of Blades et al. because such a combination would have produced strong and uniform yarns with exceptional stain resistance.

Regarding claim 32, the combined teachings fail to disclose the instantly claimed percentages of spin materials; however, one of ordinary skill would have recognized the amount of grafted polyester as a result effective variable. The amount of this spin material would have dictated the overall stain resistance of the final product. In light of this, it has been found that, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation " –*In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); and, "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation," – *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed percentages of spin materials because the amount of grafted polyester would have been recognized as a result effective variable. The skilled artisan would have optimized this quantity to tailor the stain resistance of the final product.

11. Claims 29-35, 37, 38, 41, 42, and 45-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blades et al. (US Pat. No. 3,227,784) in view of Magat et al (US Pat. No. 3,412,175).

Regarding claims 29-31, 33-35, 37, 38, 41, 42, and 45-49, Blades et al. disclose: ***(29 & 30)*** a flash-spinning mixture (column 5, line 22 through column 6, line 39) comprising a spin agent (column 5, lines 22-45) and a polymer component (column 5, lines 45-59; Examples); ***(31)*** wherein the spin agent is selected from the group consisting of aliphatic hydrocarbons, fluorocarbons, halogenated hydrocarbons, and hydrofluorocarbons (column 5, lines 22-45); ***(46)*** said flash-spinning mixture formed as a plexifilamentary yarn (column 1, line 63 through column 2, line 2; column 11, lines 7-37; Examples); ***(49)*** the plexifilamentary yarn of Claim 46 formed as a non-woven fabric (column 1, line 63 through column 2, line 2; column 11, lines 7-37; Examples); ***(47)*** said flash-spinning mixture formed as a microcellular foam (column 1, line 63 through column 2, line 2; column 11, lines 7-37; Examples); and ***(48)*** said flash-spinning mixture formed as a non-woven fabric (column 1, line 63 through column 2, line 2; column 11, lines 7-37; Examples). Blades et al. use crystalline polymers, such as ***(29, 30, 33, 34)*** polyethylene and polyester, or polymer mixtures thereof (see column 1, line 63 through column 2, line 2; column 5, lines 45-59; Examples). The result is a multi-fibrous yarn or microcellular sheet with exceptional strength and uniformity (see column 1, line 63 through column 2, line 2; column 6, lines 14-39; Examples). However, they fail to disclose the second functional polymer set forth in the instant invention.

Magat et al. disclose a functionalized (grafted) polymer used to spin fibers (see columns

1 & 2), wherein the grafting takes place prior to spinning (see column 2, lines 65-72). This corresponds to the instantly claimed second polymer:

(29) wherein said second polymer is a functional polymer selected from the group consisting of polyethylene having 1 to 25 mol % of pendant functional groups and polyethylene terephthalate having 1 to 25 mol % of pendant functional groups (columns 1 & 2); and wherein said pendant functional groups are selected from the group consisting of fluorocarbon radicals and oxyethylene radicals (column 2, lines 13-41);

(30) wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 1 to 25 mol % of pendant functional groups, copolymers of polyolefins and ethylenically unsaturated monomers having 1 to 25 mol % of pendant functional groups, polyesters having 1 to 25 mol % of pendant functional groups, and mixtures thereof (columns 1 & 2); and wherein said pendant functional groups are selected from the group consisting of fluorocarbon radicals, perfluorovinyl ether radicals, vinyl silane radicals and oxyethylene radicals (column 2, lines 13-41);

(35) wherein the second polymer is polyethylene terephthalate having 1 to 25 mol % of pendant functional groups (columns 1 & 2; Table 1);

(37) wherein the pendant group is a fluoro-olefin radical (column 2, lines 13-41); *(38)* wherein the second polymer is grafted with fluoro-olefin radical (column 2, lines 13-41);

(41) wherein the pendant group is a perfluorovinyl ether (column 2, lines 13-41); *(42)* wherein the second polymer is grafted with perfluorovinyl ether (column 2, lines 13-41); and

(45) wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 5 to 15 mol % of pendant functional groups copolymers of

polyolefins and ethylenically unsaturated monomers having 5 to 15 mol % of pendant functional groups, polyesters having 5 to 15 mol % of pendant functional groups, and mixtures thereof (columns 1 & 2).

Magat et al. disclose that their grafted polyesters give increased resistance to aqueous soil, oils, oily soil and dry soil *(see Abstract)*. Stain resistance is a commonly desired property in yarns and fabrics. In light of this, one of ordinary skill in the art would have recognized the benefit of combining these materials with the polyethylene and/or polyester blends of Blades et al. Such a combination would have produced strong and uniform yarns with exceptional stain resistance.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the grafted polyester spin materials of Magat et al. to the polyethylene and/or polyester spin blends of Blades et al. because such a combination would have produced strong and uniform yarns and/or foams with exceptional stain resistance.

Regarding claim 32, the combined teachings fail to disclose the instantly claimed percentages of spin materials; however, one of ordinary skill would have recognized the amount of grafted polyester as a result effective variable. The amount of this spin material would have dictated the overall stain resistance of the final product. In light of this, it has been found that, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation " –*In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); and, "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be

characterized as routine experimentation," – *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed percentages of spin materials because the amount of grafted polyester would have been recognized as a result effective variable. The skilled artisan would have optimized this quantity to tailor the stain resistance of the final product.

12. Claims 30-34, 39, 40, 45, 46, 48, and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blades et al. (US Pat. No. 3,081,519) in view of Foss et al. (US Pat. No. 4,254,238).

Regarding claims 30-31, 33-34, 39, 40, 45, 46, 48, and 49, Blades et al. disclose: ***(30)*** a flash-spinning mixture (column 7, line 63 through column 8, line 47) comprising a spin agent (column 7, line 74 through column 8, line 31) and a polymer component (column 4, line 65 through column 5, line 4; column 7, lines 63-73); ***(31)*** wherein the spin agent is selected from the group consisting of aliphatic hydrocarbons, fluorocarbons, halogenated hydrocarbons, and hydrofluorocarbons (column 7, line 74 through column 8, line 31); ***(46)*** said flash-spinning mixture formed as a plexifilamentary yarn (column 11, lines 7-37); ***(49)*** the plexifilamentary yarn of Claim 46 formed as a non-woven fabric (column 11, lines 7-37); and ***(48)*** said flash-spinning mixture formed as a non-woven fabric (column 11, lines 7-37). Blades et al. use crystalline polymers, such as ***(30, 33, 34)*** polyethylene and polyester, or polymer mixtures thereof (see column 7, lines 63-73; Examples; Table VII). The result is a multi-fibrous yarn with exceptional strength and uniformity (see column 1, line 61 through column 2, line 56).

However, they fail to disclose the second functional polymer set forth in the instant invention.

Foss et al. disclose a functionalized (grafted) polymer used as an antistatic agent for fiber forming polymers (see Abstract; column 6, lines 51-62). This corresponds to the instantly claimed second polymer:

(30) wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 1 to 25 mol % of pendant functional groups, copolymers of polyolefins and ethylenically unsaturated monomers having 1 to 25 mol % of pendant functional groups, polyesters having 1 to 25 mol % of pendant functional groups, and mixtures thereof (column 2, line 5 through column 4, line 23); and wherein said pendant functional groups are selected from the group consisting of fluorocarbon radicals, perfluorovinyl ether radicals, vinyl silane radicals and oxyethylene radicals (column 2, lines 5-15);

(39) wherein the pendant group is an oxyethylene trimer (column 2, lines 5-15); ***(40)*** wherein the second polymer is grafted with an oxyethylene trimer (column 2, lines 5-15); and

(45) wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 5 to 15 mol % of pendant functional groups copolymers of polyolefins and ethylenically unsaturated monomers having 5 to 15 mol % of pendant functional groups, polyesters having 5 to 15 mol % of pendant functional groups, and mixtures thereof (column 2, line 5 through column 4, line 23).

Foss et al. disclose that their grafted polymers are useful as pre-spun antistatic agents for fiber forming polymers *(see Abstract; column 6, lines 51-62)*. Anti-static properties are a commonly desired property in yarns and fabrics. In light of this, one of ordinary skill in the art would have recognized the benefit of combining these materials with the polyethylene and/or

polyester blends of Blades et al. Such a combination would have produced strong and uniform yarns with exceptional anti-static properties.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the grafted anti-static materials of Foss et al. to the polyethylene and/or polyester spin blends of Blades et al. because such a combination would have produced strong and uniform yarns with exceptional anti-static properties.

Regarding claim 32, the combined teachings fail to disclose the instantly claimed percentages of spin materials; however, one of ordinary skill would have recognized the amount of grafted anti-static agent as a result effective variable. The amount of this spin material would have dictated the overall anti-static properties of the final product. In light of this, it has been found that, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation " *–In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); and, "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation," – *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed percentages of spin materials because the amount of grafted anti-static agent would have been recognized as a result effective variable. The skilled artisan would have optimized this quantity to tailor the antistatic properties of the final product.

13. Claims 30-34, 39, 40, and 45-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blades et al. (US Pat. No. 3,227,784) in view of Foss et al. (US Pat. No. 4,254,238).

Regarding claims 30-31, 33-34, 39, 40, and 45-49, Blades et al. disclose: ***(30)*** a flash-spinning mixture (column 5, line 22 through column 6, line 39) comprising a spin agent (column 5, lines 22-45) and a polymer component (column 5, lines 45-59; Examples); ***(31)*** wherein the spin agent is selected from the group consisting of aliphatic hydrocarbons, fluorocarbons, halogenated hydrocarbons, and hydrofluorocarbons (column 5, lines 22-45); ***(46)*** said flash-spinning mixture formed as a plexifilamentary yarn (column 1, line 63 through column 2, line 2; column 11, lines 7-37; Examples); ***(49)*** the plexifilamentary yarn of Claim 46 formed as a non-woven fabric (column 1, line 63 through column 2, line 2; column 11, lines 7-37; Examples); ***(47)*** said flash-spinning mixture formed as a microcellular foam (column 1, line 63 through column 2, line 2; column 11, lines 7-37; Examples); and ***(48)*** said flash-spinning mixture formed as a non-woven fabric (column 1, line 63 through column 2, line 2; column 11, lines 7-37; Examples). Blades et al. use crystalline polymers, such as ***(30, 33, 34)*** polyethylene and polyester, or polymer mixtures thereof (see column 1, line 63 through column 2, line 2; column 5, lines 45-59; Examples). The result is a multi-fibrous yarn or microcellular sheet with exceptional strength and uniformity (see column 1, line 63 through column 2, line 2; column 6, lines 14-39; Examples). However, they fail to disclose the second functional polymer set forth in the instant invention.

Foss et al. disclose a functionalized (grafted) polymer used as an antistatic agent for fiber forming polymers (see Abstract; column 6, lines 51-62). This corresponds to the instantly claimed second polymer:

(30) wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 1 to 25 mol % of pendant functional groups, copolymers of polyolefins and ethylenically unsaturated monomers having 1 to 25 mol % of pendant functional groups, polyesters having 1 to 25 mol % of pendant functional groups, and mixtures thereof (column 2, line 5 through column 4, line 23); and wherein said pendant functional groups are selected from the group consisting of fluorocarbon radicals, perfluorovinyl ether radicals, vinyl silane radicals and oxyethylene radicals (column 2, lines 5-15);

(39) wherein the pendant group is an oxyethylene trimer (column 2, lines 5-15); ***(40)*** wherein the second polymer is grafted with an oxyethylene trimer (column 2, lines 5-15); and

(45) wherein the second polymer is a functional polymer selected from the group consisting of polyolefins having 5 to 15 mol % of pendant functional groups copolymers of polyolefins and ethylenically unsaturated monomers having 5 to 15 mol % of pendant functional groups, polyesters having 5 to 15 mol % of pendant functional groups, and mixtures thereof (column 2, line 5 through column 4, line 23).

Foss et al. disclose that their grafted polymers are useful as pre-spun antistatic agents for fiber forming polymers *(see Abstract; column 6, lines 51-62)*. Anti-static properties are a commonly desired property in yarns and fabrics. In light of this, one of ordinary skill in the art would have recognized the benefit of combining these materials with the polyethylene and/or

polyester blends of Blades et al. Such a combination would have produced strong and uniform yarns with exceptional anti-static properties.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add the grafted anti-static materials of Foss et al. to the polyethylene and/or polyester spin blends of Blades et al. because such a combination would have produced strong and uniform yarns with exceptional anti-static properties.

Regarding claim 32, the combined teachings fail to disclose the instantly claimed percentages of spin materials; however, one of ordinary skill would have recognized the amount of grafted anti-static agent as a result effective variable. The amount of this spin material would have dictated the overall anti-static properties of the final product. In light of this, it has been found that, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation " –*In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955); and, "A particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation," – *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the instantly claimed percentages of spin materials because the amount of grafted anti-static agent would have been recognized as a result effective variable. The skilled artisan would have optimized this quantity to tailor the antistatic properties of the final product.

Communication

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J. Feely
Primary Examiner
Art Unit 1712

August 24, 2007

MICHAEL FEELY
PRIMARY EXAMINER